Maine Department of Education

Practice Assessment Administration Manual

GRADE

5

SCIENCE

Table of Contents

Maine Science Assessment Practice Test
Supplemental Materials and Resources

Grade 5

There are two systems that can be used to help prepare your student for the Maine Science Assessment.

1. The Maine Science Assessment Tutorial is a set of online questions that allow students to better understand and practice using the tools and response methods they may experience using ADAM, the Maine Science Assessment platform. This tutorial does not provide practice on the content or item types from a content perspective. It will, however, provide exposure to the navigation, tools, accessibility features, and methodology for responding to item types such as drag and drop and other technology-based item types that require manipulation of the mouse.

   Tutorial test code:
   - No Text-to-speech (TTS): `STUTOR`
   - Text-to-speech (TTS) enabled: `STUTORT`

2. The Grade 5 Maine Science Assessment Practice Test is an online set of scenarios and items meant to familiarize students with the types of questions they may encounter when they take the Maine Science Assessment. The practice test is not scored, nor are the students' answers retained. Each online question can be answered and checked via the online interface. The students will receive real-time feedback that indicates the accuracy of their answers using the following messages:

   - Correct, way to go!
   - Incorrect, you may want to try again.

   Practice Test code:
   - No Text-to-speech (TTS): `SPTGR5`
   - Text-to-speech (TTS) enabled: `SPTGR5T`

Each student has up to three (3) attempts to reason through and find the correct answer. The rationales, or reasons why the incorrect answers are wrong, can be found starting on page 5 of this packet and should be used to help explain the error that they likely made that led them to choose that specific wrong answer. The rationales are developed based on the most frequent errors and may not be the exact logic or factual error a student made.

For test questions that are not scored by the system, those that require a written or constructed response, we recommend that students answer these questions on paper so that their responses can be reviewed against the rubric and discussed outside of the system. The rubrics for these questions can be found starting on page 5 of this packet.

While these tools do not take the place of your science instruction, which is the number one preparation that all students should receive, we do recommend that you have students access and take the tutorial (see URL below) to familiarize themselves with the ADAM platform, navigation, and features. Once there is good familiarity with the platform, we recommend that your students work through the practice test (see URL below) to become acquainted with how their science content will be assessed during the Maine Science Assessment.

Links:

- Maine Science Assessment Tutorial: https://adamexam.com/tester/
- Maine Science Assessment Practice Test: https://adamexam.com/tester/
- Supplemental Materials and Resources: https://mescience.zendesk.com/hc/en-us/sections/1500001237162-Resources-Document-Downloads

Universal Features, Designated Supports/Features, and Accommodations

The full list of Universal Features, Designated Supports/Features, and Accommodations for students with disabilities and English learners can be found in Appendix A of the *Maine Principal and Assessment Coordinator (PAC) Manual*.

Grade 5 Practice Test Table of Rationales and Exemplars

Item Number	Part	ACO A	ACO B	ACO C	ACO D	ACO E	Rationale	Exemplar
Daytime Moon								
1	A	N/A	N/A	N/A	N/A	N/A	The Sun should be placed in the drop box in the middle of the orbit circle, and Earth should be placed on the drop box on the orbit circle. Earth should orbit the Sun.	N/A
1	B	N/A	N/A	N/A	N/A	N/A	Earth should be placed in the drop box in the middle of the orbit circle, and the Moon should be placed on the drop box on the orbit circle. The Moon should orbit Earth.	N/A
1	C	This is incorrect because although the Moon orbits Earth and the Sun, the Sun doesn't orbit Earth.	This is incorrect because neither the Earth nor the Sun orbit the Moon.	This is correct because the Earth/Moon system orbits the Sun.	N/A	N/A	N/A	N/A

Item Number	Part	ACO A	ACO B	ACO C	ACO D	ACO E	Rationale	Exemplar
2	N/A	This is incorrect because the Moon does not produce its own light. Instead, it reflects the light of the Sun.	This is incorrect because the Moon's orbit does not make the Moon move closer to the Sun.	This is incorrect because the Moon is small in comparison to the other objects in the sky that are visible from Earth. It is because it is closer to Earth that it appears larger.	This is correct because the apparent size of the moon, in comparison to other objects in the sky, is due to how close the Moon is to Earth.	N/A	N/A	N/A
3	N/A	N/A	N/A	N/A	N/A	N/A	The Full Moon should be placed in the drop box to the left of Earth because the side of the Moon that the sunlight shines on is visible to an observer on Earth. The New Moon should be placed in the right drop box between Earth and the Sun because the dark side of the Moon is facing an observer on Earth. The top and bottom drop boxes will not be used.	N/A

Item Number	Part	ACO A	ACO B	ACO C	ACO D	ACO E	Rationale	Exemplar
4	A	N/A	N/A	N/A	N/A	N/A	Day should be placed in the drop box to the right of Earth, between Earth and the Sun, because the sunlight would shine on that side of the Earth. Night should be placed in the drop box to the left of Earth, because the sunlight would not shine on that side of the Earth. The top and bottom drop boxes will not be used.	N/A
4	B	This is correct because Earth spins counterclockwise as seen from above the north pole on its axis, which causes the Sun to appear to rise in the East and set in the West.	This is incorrect because although Earth revolves around the Sun, it does not cause us to experience day and night. Earth's revolution around the Sun results in seasons.	This is incorrect because even though the Sun rotates on its axis, this does not result in the rising and setting of the Sun as seen from Earth.	This is incorrect because the Sun does not revolve around Earth.	N/A	N/A	N/A

Item Number	Part	ACO A	ACO B	ACO C	ACO D	ACO E	Rationale	Exemplar
5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	We can see the Moon in the daytime because its orbit around Earth periodically places it above the horizon, when the Sun is also above the horizon. The light from the Sun reflecting off the Moon makes the Moon visible during the day.
Cooler								
6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	The weight of the cooler should be measured both before and after the ice melts, so the measurements can be compared to determine whether the weight of the cooler changed.

Item Number	Part	ACO A	ACO B	ACO C	ACO D	ACO E	Rationale	Exemplar
7	N/A	N/A	N/A	N/A	N/A	N/A	‘Before investigation’ should be placed under the picture on the left, because this is a model that shows the regular pattern found in the molecules in solid water (ice). ‘After investigation’ should be placed under the picture on the right, because this is a model that shows a random pattern of molecules closer together in liquid water.	N/A
8	N/A	This is incorrect because liquid water evaporates at a similar rate to ice sublimation. Therefore, the water level in either process will not change very much.	This is correct because when water freezes, the molecules arrange themselves so that the solid water expands and takes up more space than liquid water. When solid water melts, liquid water takes up less space.	This is incorrect because the number of molecules in water does not change when water changes states from solid to liquid.	This is correct because solid water does not take the shape of its container, and there is additional space between the ice cubes. Liquid water does take the shape of its container with no additional empty space.	N/A	N/A	N/A

Item Number	Part	ACO A	ACO B	ACO C	ACO D	ACO E	Rationale	Exemplar
9	N/A	N/A	N/A	N/A	N/A	N/A	The horizontal line should be placed in the ‘Ice Weight Over Time’ graph because the weight of the ice doesn’t change as it melts. The diagonal line from bottom left to top right should be placed in the ‘Ice Temperature Over Time’ graph because the temperature of liquid water is greater than the temperature of solid water. The diagonal line from top left to bottom right should be placed in the ‘Ice Volume Over Time’ graph because solid ice takes up more volume than liquid water.	N/A

Item Number	Part	ACO A	ACO B	ACO C	ACO D	ACO E	Rationale	Exemplar
10	A	This is incorrect because the weight of a substance does not change when the substance changes states. This is due to the Law of Conservation of Matter/Mass: Matter cannot be created or destroyed; it can only change forms.	This is correct because the weight of a substance does not change when the substance changes states. This is due to the Law of Conservation of Matter/Mass: Matter cannot be created or destroyed; it can only change forms.	N/A	N/A	N/A	N/A	N/A

Item Number	Part	ACO A	ACO B	ACO C	ACO D	ACO E	Rationale	Exemplar
10	B	This is incorrect because even though the water may have dissolved air, it is not enough to make a difference in weight.	This is incorrect because although the liquid water molecules will move more than the ice molecules, this doesn't affect the weight of the ice/liquid water. The same number of molecules will be present in both the ice and the liquid water.	This is incorrect because a change in thermal energy would normally result in the particles of matter moving further apart and taking up more space. However, water takes up more space when it is frozen, due to the arrangement of the molecules.	This is correct because of the Law of Conservation of Matter/Mass. The number of molecules does not change when a substance changes states. Matter cannot be created or destroyed; it can only change forms.	N/A	N/A	N/A
Parakeet Ecosystems								

Item Number	Part	ACO A	ACO B	ACO C	ACO D	ACO E	Rationale	Exemplar
11	N/A	This is incorrect because the arrows on a food web indicate the direction in which matter flows. The parakeet does not consume the falcon; therefore, matter does not flow from the falcon to the parakeet.	This is incorrect because the arrows on a food web indicate the direction in which matter flows. The mouse does not consume bacteria and fungi; therefore, matter will not transfer from the bacteria and fungi to the mouse.	This is incorrect because the arrows on a food web indicate the direction in which matter flows. Berries do not consume grasses and seeds; therefore, matter will not transfer from the grasses to the berries.	This is correct because the grasses with seeds are consumed by the grasshopper, which is in turn consumed by the parakeet. When the parakeet dies, the bacteria and the fungi (decomposers) will break down the parakeet. Therefore, matter will transfer from the grasses to the grasshopper, then to the parakeet, and then to the bacteria and fungi.	N/A	N/A	N/A

Item Number	Part	ACO A	ACO B	ACO C	ACO D	ACO E	Rationale	Exemplar
12	N/A	N/A	N/A	N/A	N/A	N/A	The grass image should be placed under the Producer heading because grasses produce food through photosynthesis. The parakeet, falcon, and grasshopper should be placed under the Consumer heading because they eat plants/animals and do not produce their own food. The mushroom image should be placed under the Decomposer heading because they break down dead organisms.	N/A
13	N/A	This is correct because according to the food web, mice consume berries. So, it is logical they would eat the fallen ones.	This is incorrect because according to the food web, falcons do not consume berries.	This is incorrect because decomposers break down organisms, not protect them from being eaten.	This is incorrect because decomposers break down organisms, and their nutrients are returned to the soil. Decomposers do not break down food for	This is correct because decomposers break down organisms, and the nutrients return to the soil.	N/A	N/A

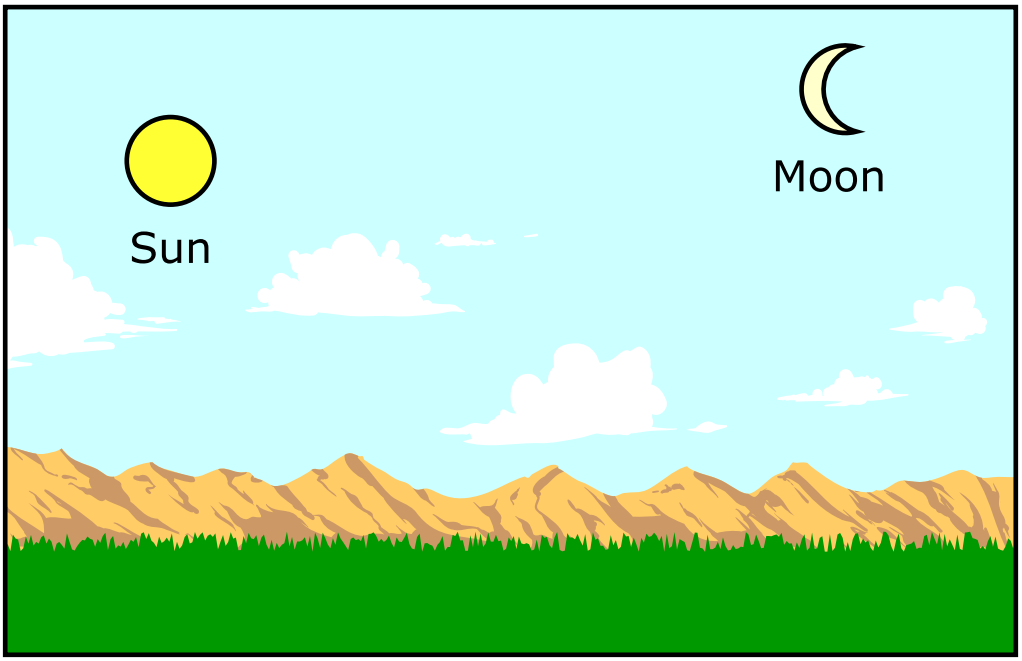
Item Number	Part	ACO A	ACO B	ACO C	ACO D	ACO E	Rationale	Exemplar
					other consumers to eat.			
14	N/A	This is incorrect because there is no data to support the height of the grass.	This is correct because Pot A received more sunlight than Pot B, and the data shows that the mass of the plant in Pot A increased by 340 g more than Pot B.	This is incorrect because there is no data to support the health of the plant.	This is incorrect because there is no data to support the amount of area the grass takes up.	N/A	N/A	N/A
15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Planting more grasses would provide more food to support more parakeets. It would also provide more food for the grasshoppers, resulting in an increase in the grasshopper population. Grasshoppers would

Item Number	Part	ACO A	ACO B	ACO C	ACO D	ACO E	Rationale	Exemplar
								then become an additional source of food for parakeets.

Rubrics

Item 05 - Phases of the Moon

Jeremy is walking home from school in the early afternoon. He sees the Sun and the Moon together in the sky. This surprises Jeremy because he thought that the Moon could be seen only at night. He wonders why the Moon is visible during the day.



How is the Moon visible from Earth during the daytime? Provide an explanation.

Points	Qualities of the Student Response
2	The response must state that both the Sun and Moon are above the horizon at the same time during the day, and the light from the Sun reflects off the Moon to make the Moon visible. **Example Student Response:** We can see the Moon in the daytime because its orbit around Earth periodically places it above the horizon, when the Sun is also above the horizon. The light from the Sun reflecting off the Moon makes the Moon visible during the day. **Note**: A 2pt response may not include any errors or flawed logic.
1	The response demonstrates a partial understanding of the prompt. The response must include • that both the Sun and Moon are above the horizon at the same time OR • that the light from the Sun reflects off the Moon to make the Moon visible during the day.
0	The response demonstrates minimal understanding of the prompt. The response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.

Item 06 - Cooler

Max is helping to clean up after a picnic. A large cooler filled with ice was used to keep drinks cold. Max tries to move the cooler, but the cooler is too heavy for him to carry.

Max wonders if the cooler will weigh less once the ice inside melts.

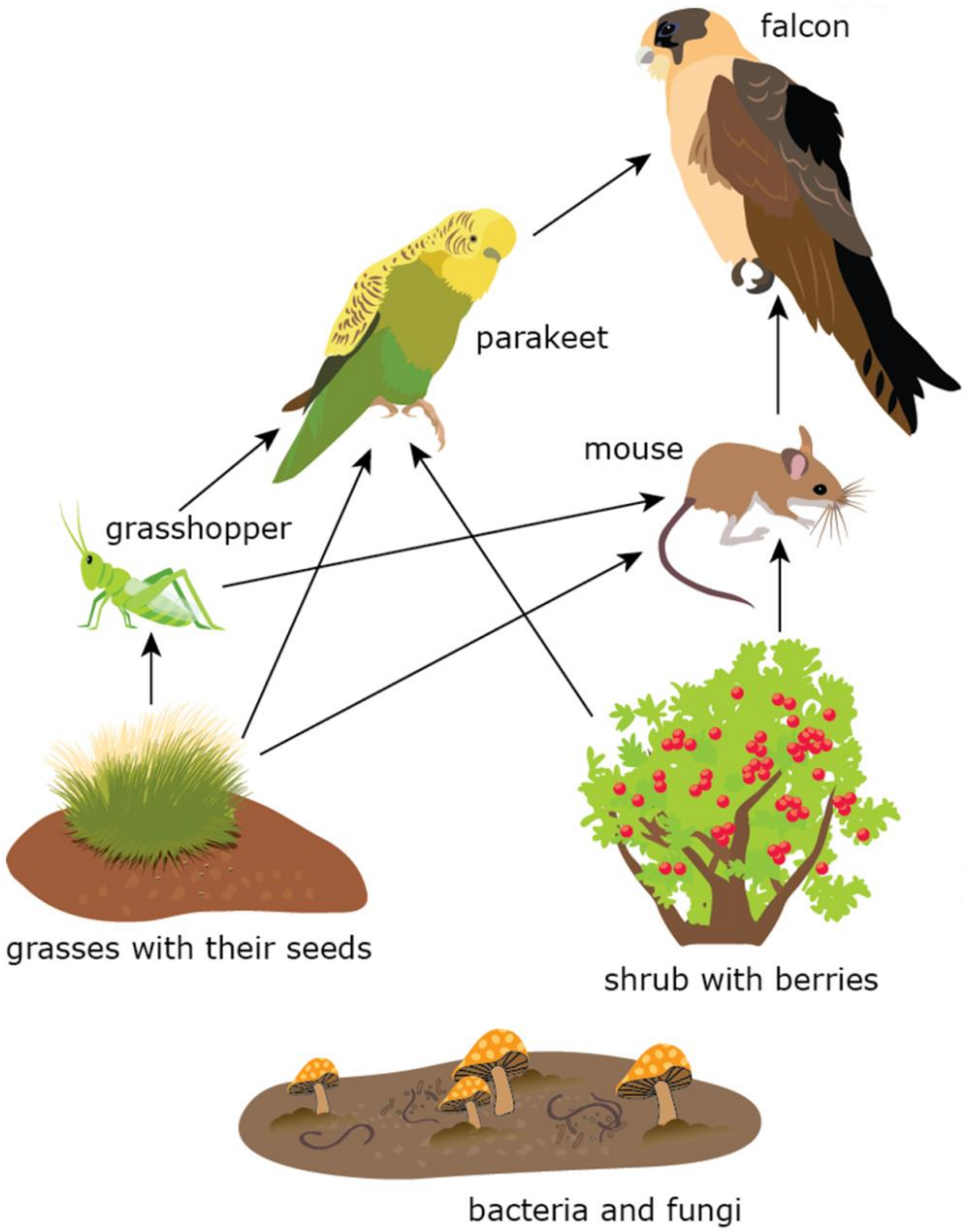
Max wants to find out if the cooler will weigh less once the ice melts.

What data must Max collect? Explain, and include information about when he should collect his data.

Points	Qualities of the Student Response
2	The response must state that the weight of the cooler should be measured both before and after the ice melts, so they can be compared to determine whether the weight changes. **Example Student Response:** Max must collect his data before and after the ice in the cooler melts. This will help Max know if the weight in the cooler changes. **Note**: A 2pt response may not include any errors or flawed logic.
1	The response demonstrates a partial understanding of the prompt. The response must include collecting the weight of the cooler before and/or after the ice melts but does not explain why.
0	The response demonstrates minimal understanding of the prompt. The response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.

Item 15 - Parakeet Ecosystem

Nancy works at the zoo and is in charge of the parakeet exhibit. She has been studying the role of the parakeets in their natural environment. She builds an incomplete model of a food web.



Nancy notices a parakeet nest with several eggs inside and wants to increase the food supply to support the growing parakeet population. One idea is to plant more grass inside the parakeet exhibit by increasing the amount of sunlight.

Nancy tests her idea by planting the same amount of grass seeds in two different pots, Pot A and Pot B. Each has the same amount of soil. Nancy places Pot A in the sunlight for 2 hours more per day than Pot B. After two months, she weighs each grass plant to see how much it grew. She records her data in a table.

Results of Grass Plant Growth		
Pot	Starting Mass of Plant (g)	Ending Mass of Plant (g)
A	453	1,247
B	453	907

How will planting more grasses support the needs of the growing parakeet population in the exhibit? Explain your reasoning.

Points	Qualities of the Student Response
2	The response must state that planting more grasses would provide more food to support more parakeets. It would also provide more food for the grasshoppers, resulting in an increase in the grasshopper population. Grasshoppers would then become an additional source of food for parakeets. **Example Student Response:** Planting more grasses would provide more food to support more parakeets. It would also provide more food for the grasshoppers, resulting in an increase in the grasshopper population. Grasshoppers would then become an additional source of food for parakeets. **Note**: A 2pt response may not include any errors or flawed logic.
1	The response demonstrates a partial understanding of the prompt. The response must state • that planting more grasses would provide more food for the parakeets because parakeets eat the grass OR • that it would provide more food for the grasshoppers which will help the population of grasshoppers increase. The increase in the population of grasshoppers affect the population of parakeets since parakeets also eat grasshoppers.
0	The response demonstrates minimal understanding of the prompt. The response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.

New Meridian

Maine Science Practice Assessment